PORTABLE CONTAINER SEPARATELY CONTAINING TWO CONSUMABLE PRODUCTS, AND A DRY CONSUMABLE PRODUCT, ESPECIALLY RTE CEREAL, FOR USE THEREWITH

Background of the Invention

The present invention relates to a container that separately contains a dry and a liquid consumable product, and dry consumable product for use therewith. In particular, it relates to a dual compartment container containing a liquid consumable product and a dry consumable product comprised of a plurality of pieces, such as ready-to-eat cereal, optimized for uniform dispensing from the container.

A highly popular combination food item is dry cereal and milk. Typically, the cereal and milk are combined in a bowl and then consumed using a spoon. Thus, so long as the consumer is at a stationary location and has a table and spoon available, the cereal and milk meal is readily prepared and eaten. Unfortunately, however, it is virtually impossible to easily consume the milk and cereal product while traveling (or "on-the-go") due to the open nature of the bowl and the requirement of a spoon. For example, it is highly difficult to carry a bowl of cereal and milk without spilling the combination product (e.g., walking, hiking, traveling in an automobile, etc.). Further, on-the-go consumption (i.e., no convenient structure such as a table onto which the bowl can be placed) occupies both of the user's hands; one hand holding the bowl and the other hand holding the spoon. As a result, the consumer cannot engage in other activities requiring use of a hand.

This lack of transportability is in direct contrast to recent consumer preferences. In particular, consumers have expressed a heightened desire for their favorite consumable product to be packaged in single-serving containers that facilitate convenient, single-handed, on-the-go consumption. In fact, manufacturers have now made available a wide variety of food products in portable, single-handed consumption packages or containers. For examples beverages such as soda pop, milk, juice, etc., are commonly sold in single-serving containers. Other food products, ranging from yogurt to dry snack foods

are also similarly packaged. In general terms, the packaging technique for these products is relatively straight forward in that only a single type of consumable item is contained. In other words, a single-serving beverage container need only define a single storage region for containing the beverage. Similarly, a snack food package has a single compartment enclosing a single type of snack food. In direct contrast, a container for cereal and milk must separately contain the two items prior to consumption. If the cereal and milk were initially combined within a single compartment, the quality of the cereal would quickly deteriorate, as would the milk.

Efforts have been made to provide portable packaging that separately contains a single-serving of cereal and a single-serving of milk. For example, Ness, U.S. Patent No. 5,753,289 describes a container forming side-by-side compartments available to separately contain cereal and milk. A screw cap is placed over the compartments and forms two pour openings that allow dispensing of the cereal and milk, respectively. Alternatively, Dickerson, U.S. Patent No. 5,706,980 describes a milk and cereal container formed by a first cup nested within a second cup. Cereal is contained within the first cup, whereas milk is contained within the second cup. In this regard, a separate cover is placed over the first cup and forms a pour opening through which the cereal can be dispensed. A variety of other cereal and milk containers are also available.

Regardless of the exact construction, the resulting container preferably facilitates convenient, simultaneous consumption of both the milk and the cereal. Thus, the pour openings associated with the respective compartments must be positioned in close proximity to one another. Further, the pour openings themselves must be relatively small so as to easily "fit" into a consumer's mouth. While these goals can be achieved via appropriate container design features, certain other dispensing concerns may arise.

In particular, because the milk is a liquid, it will readily flow through the pour opening associated with the milk compartment or cup. Cereal, however, is not inherently flowable through a confined space. Instead, most available cereals otherwise useful with a dual compartment container, and in particular ready-to-eat ("RTE") cereals, are dry. Further, depending upon the particular

ingredients (e.g., wheat, oats, rice, etc.), the individual cereal pieces have varying shapes such as flakes, rings, cylinders, etc., that do not promote flow through a confined space. For example, flake-shaped cereal pieces readily cling to one another, the resulting combination possibly clogging the pour opening. Similarly, due to their shape and/or size, the individual cereal pieces may become lodged against internal corners or edges of the compartment and/or pour opening, again impeding desired uniform flow. Finally, dispensing of the cereal through the pour opening is achieved by tilting the container. Thus, cereal flow is gravity-induced. Unfortunately, many RTE cereals, especially puffed RTE cereals, are of minimal density and are less likely to achieve uniform flow through a restricted opening.

Containers for separately containing milk and cereal, or other liquid and dry consumable products, continue to evolve and improve. However, no efforts have been made to provide a cereal optimized for use within these containers. Effectively, then, the overriding consumer desire for uniform dry consumable product flow from a portable, dual compartment container cannot be satisfied. Therefore, a need exists for a portable, liquid and dry consumable product container, and dry consumable product for use therewith, that provides optimal dispensing of dry consumable product therefrom.

Summary of the Invention

One aspect of the present invention relates to a portable, packaged consumable good article including a container, a volume of liquid consumable product and a dry consumable product. The container includes a first compartment, a second compartment, a first pour opening, and a second pour opening. The first and second compartments are connected to one another. The first pour opening is associated with the first compartment and facilitates restricted flow of a contained product therefrom. Similarly, the second pour opening is associated with the second compartment and facilitates restricted flow of a contained product therefrom. The volume of liquid consumable product is contained within the first compartment. Finally, the dry consumable product is contained within the second compartment. In this regard, the dry consumable

product comprises a plurality of pieces. In one preferred embodiment, the pieces each have a maximum outer dimension not greater than 0.4 inch. In another preferred embodiment, each of the plurality of pieces has a density not less than 225 g /100 inch^3. In a most preferred embodiment, the pieces are puffed cereal pieces that are substantially uniform, substantially spherical, having a diameter in the range of 0.2-0.25 inch and a density in the range of 225-375g/100 inch^3.

Yet another aspect of the present invention relates to a portable, packaged consumable good article including a container, a volume of liquid consumable product, and a dry consumable product. The container includes a first compartment, a second compartment, a first pour opening, and a second pour opening. The first and second compartments are connected to one another. The first pour opening is associated with the first compartment and facilitates restricted flow of a contained product therefrom. Similarly, the second pour opening is associated with the second compartment and facilitates restricted flow of a contained product therefrom. The volume of liquid consumable product is contained within the first compartment. Finally, the dry consumable product is contained within the second compartment. In this regard, the dry consumable product is comprised of a plurality of pieces having at least one of a shape, size, and density configured to promote substantially uniform, gravity-induced flow through the second pour opening. In one preferred embodiment, each of the plurality of pieces is puffed cereal.

Yet another of the present invention relates to a ready-to-eat cereal for containment within, and dispensement from, a portable container. The container includes a storage compartment and a pour opening. The pour opening has a transverse cross-sectional area less than a maximum transverse cross-sectional area of the storage compartment such that the pour opening facilitates restricted, gravity-induced flow from the compartment. With this in mind, the cereal comprises a plurality of substantially spherical cereal pieces, each having a diameter in the range of 0.2 - 0.4 inch and a density in the range 225 – 375 g/100 inch^3.

Yet another aspect of the present invention relates to a method of manufacturing a packaged consumable product article. The method includes

providing a container having a first compartment, a second compartment, a first pour opening, and a second pour opening. The first and second compartments are connected to one another. The first pour opening is fluidly connectable to the first compartment for facilitating restricted product flow therefrom. Similarly, the second pour opening is fluidly connectable to the second compartment for facilitating restricted product flow therefrom. A volume of liquid consumable product is dispensed into the first compartment. A dry consumable product is provided, comprised of a plurality of pieces each having a maximum outer dimension not greater than 0.4 inch. Finally, a quantity of the pieces are dispensed into the second compartment. With this methodology, the resulting container separately contains the liquid and dry consumable products.

Yet another aspect of the present invention relates to a method of manufacturing a packaged consumable good article. The method includes providing a container including a first compartment, a second compartment, a first pour opening, and a second pour opening. The first and second compartments are connectable to one another. The first pour opening is fluidly connectable to the first compartment for facilitating restricted product flow therefrom. Similarly, the second pour opening is fluidly connectable to the second compartment for facilitating restricted product flow from the second compartment. A volume of liquid consumable product is dispensed into the first compartment. A dry consumable product comprised of a plurality of pieces are provided. In this regard, each of the pieces has a density of not less than 225 g/100 inch^3. A quantity of the pieces is dispensed into the second compartment. The resulting container separately contains the consumable products. In one preferred embodiment, the pieces are each substantially spherical, having a diameter in the range of 0.2 - 0.25 inch.

Brief Description of the Drawings

FIG. 1 is a cross-sectional view of a packaged consumable good article in accordance with the present invention, with a portion cut away;

FIG. 2 is a perspective view of an alternative packaged consumable good article in accordance with the present invention; and

FIG. 3 is a cross-sectional view of an alternative packaged consumable good article in accordance with the present invention.

Description of the Preferred Embodiments

One preferred embodiment of a packaged consumable good article 10 in accordance with the present invention is provided in FIG. 1. The packaged consumable good article 10 includes a container 12, a volume of liquid consumable product 14, and a quantity of dry consumable product 16. Details on the various components are described below. In general terms, however, the liquid consumable product 14 and dry consumable product 16 are separately contained within the container 12. The dry consumable product 16 is preferably optimally configured for uniform dispensing from the container 12 during a pouring operation.

As will be described below, the container 12 can assume a wide variety of forms. With the embodiment of FIG. 1, the container 12 includes a container body 20 and a cover 22. The container body 20 integrally forms a first compartment 24 and a second compartment 26. As illustrated in FIG. 1, the compartments 24, 26 are connected to one another, in a side-by-side fashion.

The cover 22 is configured for selective assembly to the container body 20 and defines a first pour opening 30 and a second pour opening 32. For example, the cover 22 can be threaded, adhered, snap fitted, etc., to the container body 20. Regardless, upon final assembly, the first pour opening 30 is fluidly connected or otherwise associated with the first compartment 24, whereas the second pour opening 32 is fluidly connected or otherwise associated with the first compartment 24. As is illustrated in FIG. 1, each of the pour openings 30, 32 has a transverse, cross-sectional area that is less than a maximum transverse cross-sectional area of the respective compartment 24, 26, such that the pour openings 30, 32 allow or facilitate restricted flow of the contained consumable products 14, 16. With this configuration, then, the liquid consumable product 14 contained within the first compartment 24 can be dispensed therefrom via the first pour opening 30. Similarly, the dry consumable product 16 contained

within the second compartment 26 can be dispensed therefrom via the second pour opening 32.

As described in greater detail below, the container 12 can assume a number of configurations different from that shown in FIG. 1. By way of example, U.S. Patent Nos. 5,706,980 and 5,757,289 describe acceptable, alternative container configurations.

In one preferred embodiment, the liquid consumable product 14 is milk. The milk can assume a wide variety of forms known in the art (e.g., whole, 2%, 1%, skim, chocolate-flavored, etc.). Further, the milk may include additives that promote an enhanced shelf life. Alternatively, a number of other liquid consumable products are also acceptable, including, for example, juice, water, soda pop, beer, coffee, etc.

The dry consumable product 16 is comprised of a plurality of pieces 40. The pieces 40 are preferably configured to each have a predetermined shape, size and/or density that facilitates substantially uniform flow through the second pour opening 32. For example, in one preferred embodiment, each of the pieces 40 are substantially spherical, deviating no more than 10 percent in any one dimension from a true sphere. With this preferred substantially spherical configuration, each of the pieces 40 defines a maximum diameter or outer dimension. Alternatively, the pieces 40 need not be substantially spherical (e.g., flattened), but will still define a maximum outer dimension. For example, the pieces 40 can be cylindrical. With this in mind, in one preferred embodiment, each of the pieces 40 has a maximum outer dimension not greater than 0.4 inch, preferably in the range of 0.2 - 0.4 inch, more preferably in the range of 0.2 - 0.25 inch. It has surprisingly been found that forming the pieces 40 within the above-identified size constraints greatly improves flow through an opening, such as the second pour opening 32, appropriately sized for use with a dual compartment container configured for single-handed use, such as the container 12 described above. In another preferred embodiment, each of the pieces 40 has a density of not less than 225 g/100 inch^3, more preferably in the range of 225 - 375 g/100 inch^3. It has been surprisingly found that forming the pieces 40 within these density constraints facilitates uniform flow through an opening,

such as the second pour opening 32, associated with a dual compartment container configured for single-handed use, such as the container 12 described above. In a most preferred embodiment, the pieces 40 each are substantially spherical, having a diameter in the range of 0.2 - 0.25 inch and a density in the range of 225 - 375g/100 inch^3. Regardless of the specific parameter, each of the pieces 40 substantially uniformly conforms therewith. That is to say, each of the pieces 40 need not be identical, but will fall within the designated parameter range or characteristic.

It will be understood that during manufacture of most dry consumable products comprised of individual pieces, the pieces will have characteristics at intermediate stages of manufacture that are different from the final, finished product. For example, a dry consumable product may first be formulated and then baked. Prior to baking, the individual pieces may have a much smaller maximum outer dimension and/or greater density than after baking. Also, the particular product may include additional coatings applied after baking (e.g., a sugar coating applied to RTE cereal). With these distinctions in mind, each of the above-described parameters relate to the pieces 40 in a final product form.

In one preferred embodiment, the dry consumable product 16 is a ready-to-eat cereal, such that the pieces 40 are individual cereal pieces. The cereal pieces can be formed from a variety of different cereal feed materials, including, for example, wheat, oats, barley, corn, triticale, rice, etc. The cereal feed materials, of course, can also optionally include conventional cereal ingredients such as salt, minerals, malt syrup, sugar(s), fiber (e.g., bran, cellulose, pectin, psyllium), vitamins, flavor, colorants, and various coatings, to name but a few. In one preferred embodiment, the cereal pieces 40 are formed as a puffed cereal product, as it has been surprisingly found that puffed cereal pieces are conducive to formation as spheres. Manufacture of a ready-to-eat cereal typically entails providing a dry blend of starchy cereal ingredients with or without a bran or fiber constituent that is well mixed and then combined with water and mixing with heat to cook or gelatinize the starchy component of the cereal composition. The gelatinized or cooked cereal upon further mixing forms a cooked farinaceous dough. A variety of well known cooking methods and equipment

can be used to prepare a cooked cereal dough. For example, the wetted cereal blend can be processed in a cooker extruder or in a pressurized and agitated steam cooker each of which form a cooked cereal dough, which in turn is fed to a cereal pellet forming extruder. In another embodiment, the cooking and dough forming steps are preformed simultaneously in a high pressure, cooker extruder equipped with a pellet-forming die head.

In this regard, it is possible to achieve a puffed cereal product substantially uniformly conforming to the above-described parameters using a well known cereal cooking apparatus known in the art as a James Cooker. The James Cooker provides a low shear, low pressure, extended time (e.g., 30 – 180 minutes) type of cooking yielding a cooked cereal dough that has a highly developed cooked flavor but has not experienced high amounts of shear. The cereal dough is extruded under low shear through die plates with die holes to produce sized and shaped cooked cereal dough products. The basic design and operation of the James Cooker is described in U.S. Patent Nos. 2,233,919, 2,263,301, and 2,272,007, each issued to T.R. James and incorporated herein by reference. Over the years, various improvements have been made to the James Cooker, for example implementation of a twin screw preconditioner unit as described in U.S. Patent No. 6,129,010 to Hurd et al. The die plates associated with a James Cooker can be formed to extrude a supply of cooked cereal pellets that are subsequently expanded or puffed to the desired diameter and density, such as with a known gun-puffing device. By controlling the size and shape of the openings defined by the die plate, as well as the ingredients and cooking parameters, the subsequent amount of puff, and thus the shape, diameter and density of the resulting product, can be substantially uniformly controlled.

Alternatively, other known ready-to-eat puffed cereal manufacturing techniques can be employed. For example, a cooker extruder other than a James Cooker can be used to extrude consistently sized and shaped cooked cereal pellets, such as a twin screw cooker extruder. Also, the preferably puffed cereal pieces can be prepared by a cooker expander device as known in the art. Even further, a gun-puffing device, as known in the art, can be utilized to provide the preferred, puffed cereal. Finally, the cereal pieces need not necessarily be

puffed, such that any other known ready-to-eat cereal manufacturing process/machine can be utilized. Regardless of the exact technique, however, the resulting cereal pieces conform to the above-described critical parameters of shape, size and/or density. In a most preferred embodiment, the pieces 40 are a puffed product prepared by a James Cooker or a cooker extruder.

While the dry consumable product 16 has been described as preferably being a RTE cereal, a wide variety of other dry, flowable consumable products are equally acceptable. For example, the dry consumable product 16 can be crackers, pretzels, granola, cookies, candy, etc.

Upon final assembly, the packaged consumable good article 10 is made available to a consumer (not shown) for consumption. In this regard, the pieces 40 are uniquely configured to promote substantially uniform flow through the second pour opening 32. In one preferred embodiment, the first and second pour openings 30, 32 are positioned in close proximity to one another, so that the consumer can readily place both openings 30, 32 into his or her mouth for simultaneous consumption of the consumable products 14, 16. To accomplish this desired result, the openings 30, 32 must be relatively small, with the first pour opening 30 (otherwise facilitating dispensing of the liquid consumable product 14) being smaller in transverse cross-sectional area than the second pour opening 32 (otherwise facilitating dispensing of the dry consumable product 16). The preferred substantially uniform spherical shape, diameter in the range of 0.2 – 0.4 inch and density in the range of 225 – 375 g/100 inch^3 for the pieces 40 facilitates the preferred uniform flow through the second pour opening 32. In this regard, the container 12 is tilted such that gravity induces the pieces 40 to flow to the second opening 32.

It will be understood that the container 12 can assume a wide variety of forms other than that illustrated in FIG. 1. For example, FIG. 2 provides a perspective view of an alternative container 50. The container 50 includes a first compartment 52 assembled to a second compartment 54. Unlike the integrally formed container 12 (FIG. 1) previously described, the compartments 52, 54 are separately manufactured bodies that are subsequently assembled to one another. With this design, the first compartment 52 can be filled with the liquid

consumable product 14 and the second compartment 54 filled with the dry consumable product 16 prior to assembly to one another. Further, the container 50 does not include a separate, pour opening-defining cover (such as the cover 22 previously described with respect to FIG. 1). Instead, the compartments 52, 54 are bottle-shaped, tapering at upper portions thereof to form a first pour opening 56 and a second pour opening 58, respectively. The pour openings 56, 58 combine to define a pour region 60 that is substantially transversely centered relative to a body perimeter 62 of the container 50.

The volume of liquid consumable product 14, as previously described, is contained within the first compartment 52. In this regard, a portion of the first compartment 52 has been cutaway in the view of FIG. 2 to better illustrate the liquid consumable product 14. Similarly, the quantity of dry consumable product 16, as previously described, is container within the second compartment 54. In this regard, a portion of the second compartment 54 has been cutaway in the view of FIG. 2 to better illustrate the dry consumable product 16, including the pieces 40.

The pieces 40 are again configured to conform to the critical parameters described above. As such, in a preferred embodiment, the cereal pieces 40 are preferably substantially uniform, being substantially spherical with a diameter in the range of 0.2 – 0.4 inch, more preferably in the range of 0.2 – 0.25 inch, and having a density in the range of 225 – 375 g/100 inch^3. As should be evident from FIG. 2, the pour region 60 is preferably sized to fit within a consumer's mouth (not shown). With this in mind, the pour region 60 is limited to a transverse cross-sectional area corresponding with a consumer's mouth when comfortably opened. Because the liquid consumable product 14 is a liquid, the first pour opening 56 can have a relatively small transverse cross-sectional area, and is preferably circular with a diameter of approximately 0.25 inch. The second pour opening 58, on the other hand, is preferably as large as possible, but does not, when combined with the first pour opening 52, exceed an acceptable area for placement in a typical consumer's mouth. With this in mind, the pieces 40 are preferably sized in accordance with the transverse cross-sectional area of the second pour opening 58 so as to avoid clogging during a pouring operation.

More particularly, the pieces 40 each define a maximum cross-sectional area that is substantially the same for each of the pieces 40. To ensure relatively uniform flow through the second pour opening 58, the maximum cross-sectional area of each of the pieces 40 is preferably at least 2.5 times smaller than the transverse cross-sectional area of the second pour opening 58.

While the containers 12 (FIG. 1) and 50 (FIG. 2) have been described as constructing the respective compartments in a side-by-side fashion, other assemblies are equally acceptable. For example, FIG. 3 depicts another alternative container 80 including a first compartment 82 containing the liquid consumable product 14 and a second compartment 84 containing the dry consumable product 16. In general terms, the compartments 82, 84 are formed as cups, with the second compartment 84 nesting within the first compartment 82. A first pour opening 86 is defined by at least the first compartment 82, and facilitates restricted flow of the liquid consumable product 14 therefrom during a pouring operation. Further, a separate cover piece 88 is secured to at least the second compartment 84 and forms a second pour opening 90 that facilitates restricted flow of the dry consumable product 16 from the second compartment 84 during a pouring operation. Once again, because the pour openings 86, 90 are positioned in close proximity to one another and have a limited, combined, transverse cross-sectional area, the pieces 40 preferably conform to the previously described critical parameters so as to promote substantially uniform, gravity-induced flow through the second pour opening 90 during a pouring operation.

Notably, the dry consumable product 16 described above can be an available product that is formed via a varying methodology to produce the pieces 40 conforming with the above parameters. For example, the dry consumable product 16 can be Kix® puffed cereal that is specially manufactured to have a size and/or density in accordance with present invention. With this example, the resulting Kix® product will be comprised of the same ingredients and have a similar taste and color, but the individual pieces will have a dimension not more than 0.4 inch, most preferably 0.2-0.25 inch; and a density of not less than 225 g/100 inch^3, most preferably 225-375 g/100 inch^3.

The packaged consumable good article, and cereal for use therewith, of the present invention provides a marked improvement over previous designs. A portable container is provided that separately contains a liquid and a dry consumable product. The container promotes convenient, single-handed consumption of the consumable products in a simultaneous fashion. To this end, the pieces are specifically configured, in terms of at least one of shape, size and density, most preferably in terms of all three characteristics, to promote substantially uniform, gravity-induced flow through a limited-sized pour opening associated with the compartment otherwise containing the cereal. Thus, unlike previous milk and cereal container article designs in which a "standard" ready-to-eat cereal is employed, the present invention achieves the uniform cereal flow highly desired by consumers.

Although the present invention has been described with reference to preferred embodiments, those of skill in the art will recognize that changes can be made in form and detail without departing from the spirit and scope of the present invention.